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**Bunker et al.**(10) **Pub. No.: US 2011/0293423 A1**(43) **Pub. Date: Dec. 1, 2011**(54) **ARTICLES WHICH INCLUDE CHEVRON  
FILM COOLING HOLES, AND RELATED  
PROCESSES****Publication Classification**(51) **Int. Cl.**  
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(52) **U.S. Cl.** ..... **416/95; 29/889**(75) **Inventors:** **Ronald Scott Bunker**, Niskayuna,  
NY (US); **Benjamin Paul Lacy**,  
Greer, SC (US)(57) **ABSTRACT**(73) **Assignee:** **GENERAL ELECTRIC  
COMPANY**, SCHENECTADY, NY  
(US)

An article is described, including an inner surface which can be exposed to a first fluid; an inlet; and an outer surface spaced from the inner surface, which can be exposed to a hotter second fluid. The article further includes at least one row or other pattern of passage holes. Each passage hole includes an inlet bore extending through the substrate from the inlet at the inner surface to a passage hole-exit proximate to the outer surface, with the inlet bore terminating in a chevron outlet adjacent the hole-exit. The chevron outlet includes a pair of wing troughs having a common surface region between them. The common surface region includes a valley which is adjacent the hole-exit; and a plateau adjacent the valley. The article can be an airfoil. Related methods for preparing the passage holes are also described.

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